Installing an IBM InfoSphere VDP Appliance on a Hyper-V Server

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1 Before You Begin

The IBM InfoSphere VDP Appliance is a virtual machine installed on a Hyper-V hypervisor. Before you begin, your IBM InfoSphere representative will provide:

- The latest VDP Appliance VHDX file.
- An IBM InfoSphere VDP Appliance license key: to get this, capture the system UUID and include it in an email license key request for each install to optkeys@us.ibm.com.

Use these tables to compare the capabilities that you get with each license, and the requirements to support these licenses:

Requirements for VDP Appliances that WILL NOT Use Dedup Policies

Requirements for VDP Appliances that WILL Use Dedup Policies

Requirements for VDP Appliances that WILL NOT Use Dedup Policies

This table allows you to compare the requirements and capabilities of IBM InfoSphere VDP Appliance licenses for appliances that will protect data in Snapshot Pools only.

Requirement	License		
	60TB	120TB	200TB
Cores required.[a b]	4	6	8
Cores required for encryption at rest. [a b]	6	8	10
Minimum Reserved Memory	16GB	32GB	48GB
Disk Space for Primary Pool.	200GB		
Minimum Disk Space for Snapshot Pool.	10GB		
Required Disk Space for Dedup Pool if Appliance WILL NOT use dedup policies.	100GB		
Maximum VDisks	10,000		

a. Minimum 2 GHz per core. Required cores can be spread across multiple CPUs, with multiple CPUs providing slightly better performance. The cores and CPU **must be reserved** and the balloon driver must be turned off. Any paging or swapping will cause significant performance impact and in some cases result in the appliance deadlocking.
b. Sockets have a multiplying effect on the number of cores. Select a combination of sockets and cores to achieve the required number of cores.

Requirements for VDP Appliances that WILL Use Dedup Policies

The following table allows you to compare the requirements and capabilities of licenses for VDP Appliances that will protect data in both the Snapshot and Dedup Pools.

Requirement	License				
	1TB	5TB	10TB	30TB	50TB
Cores required.[a b]	1	2	4	8	12
Cores required for encryption at rest. [a b]	2	4	6	10	15
Minimum Reserved Memory	6GB	10GB	16GB	48GB	72GB
Minimum Disk Space for Primary Pool.	200GB				
Minimum Disk Space for Snapshot Pool.	10GB				
Minimum Disk Space for Dedup Pool.	100GB				
SSD Minimums [c]	Optional: 11GB	Optional: 53GB	Optional: 103GB	Required: 308GB	Required: 512GB
Maximum VDisks	1000			3000	5000

a. Minimum 2 GHz per core. Required cores can be spread across multiple CPUs, with multiple CPUs providing slightly better performance. The cores and CPU **must be reserved** and the balloon driver must be turned off. Any paging or swapping will cause significant performance impact and in some cases result in the appliance deadlocking.

b. Sockets have a multiplying effect on the number of cores. Depending on how your VMware license is configured, select a combination of sockets and cores to achieve the required number of cores.

c. See Chapter 6, Adding an SSD to an IBM InfoSphere VDP Appliance for details on adding SSDs.

Note: *The 5TB license is used for evaluations. It cannot be increased. If you decide to purchase an IBM InfoSphere VDP Appliance you can either keep the current 5TB appliance or install a new, separate, larger VDP Appliance.*

2 Installing an IBM InfoSphere VDP Appliance Using SCVMM

This chapter details:

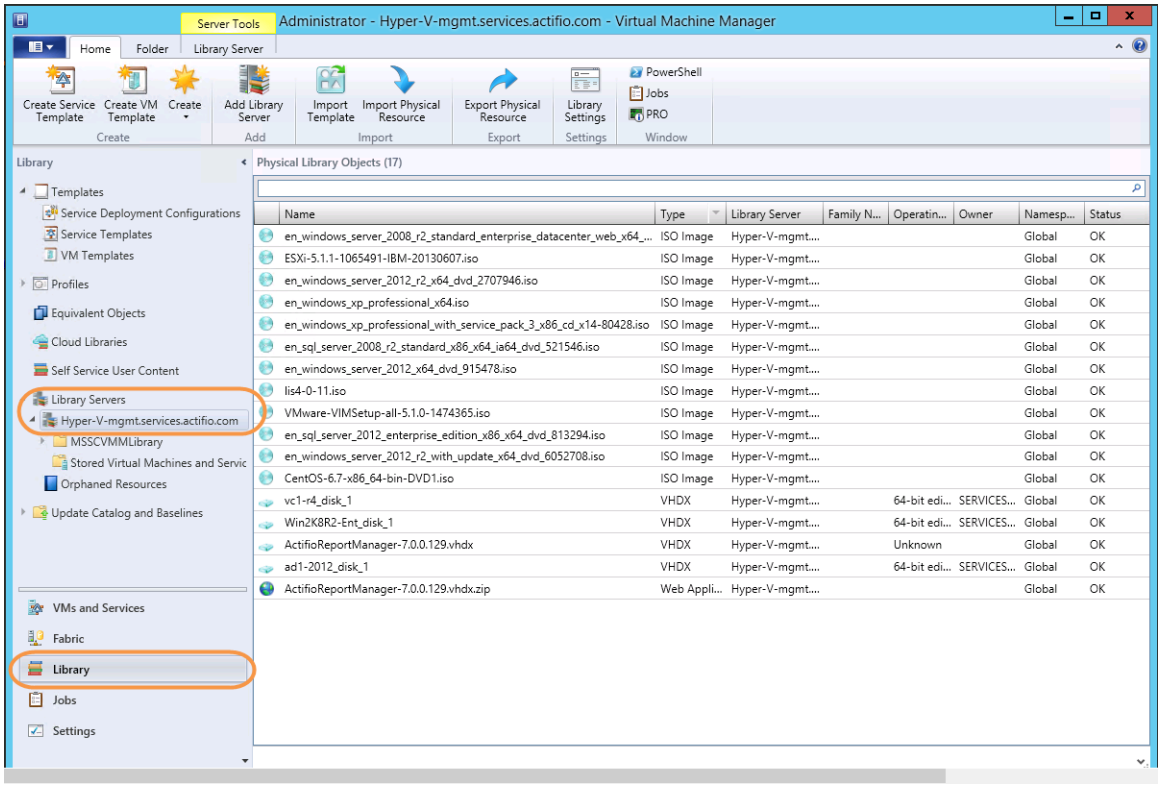
Deploying the VHDX in SCVMM on page 3

Configuring the VDP Appliance VM in SCVMM on page 6

Deploying the VHDX in SCVMM

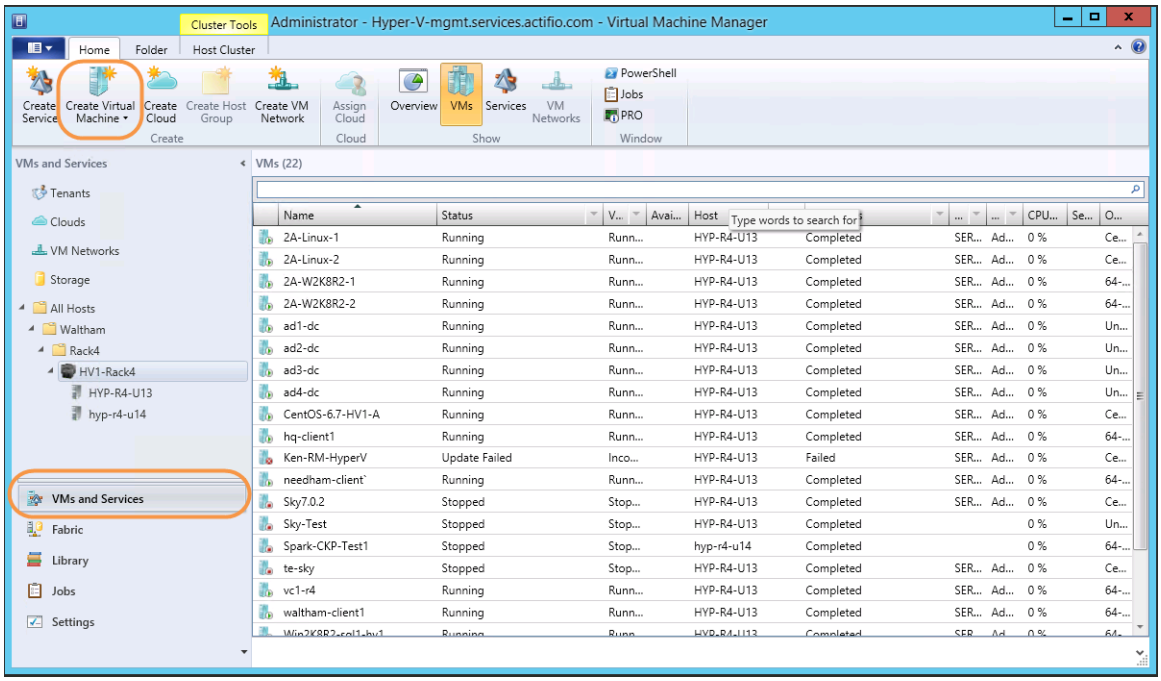
You deploy the VHDX in SCVMM like any other Hyper-V VM. The following steps show SCVMM running on Windows 2012 R2.

1. Get the VDP Appliance VHDX file from IBM InfoSphere Support and copy it into the VMM Library location.
2. Launch SCVMM.
3. Select Library in the bottom left pane, then select **Library Servers**. Right-click the server and click **Refresh**.



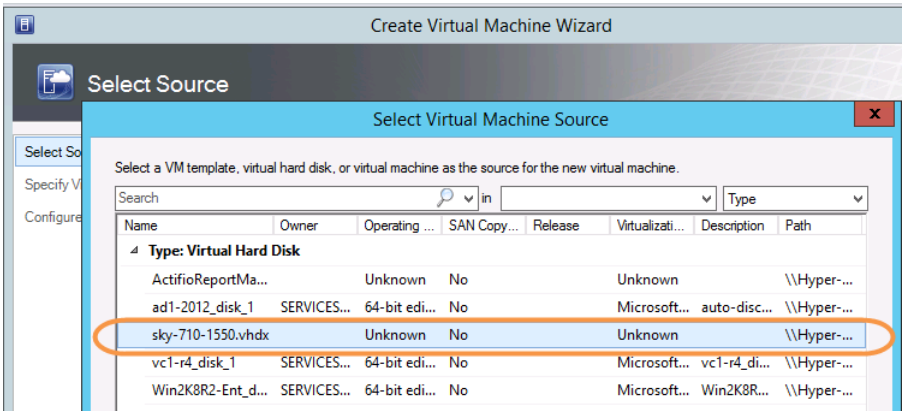
Refreshing the Library

4. Select **VMs and Services** in the bottom left pane.
5. On the top tab, select **Create Virtual Machine**.



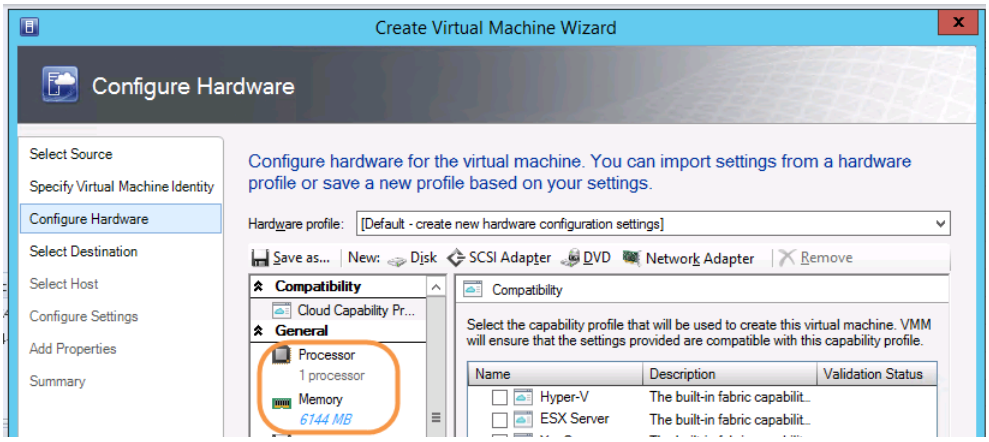
Creating the VM

6. In the Select Source section, browse to select the VDP Appliance VHDX file from the Library and select **Next**.



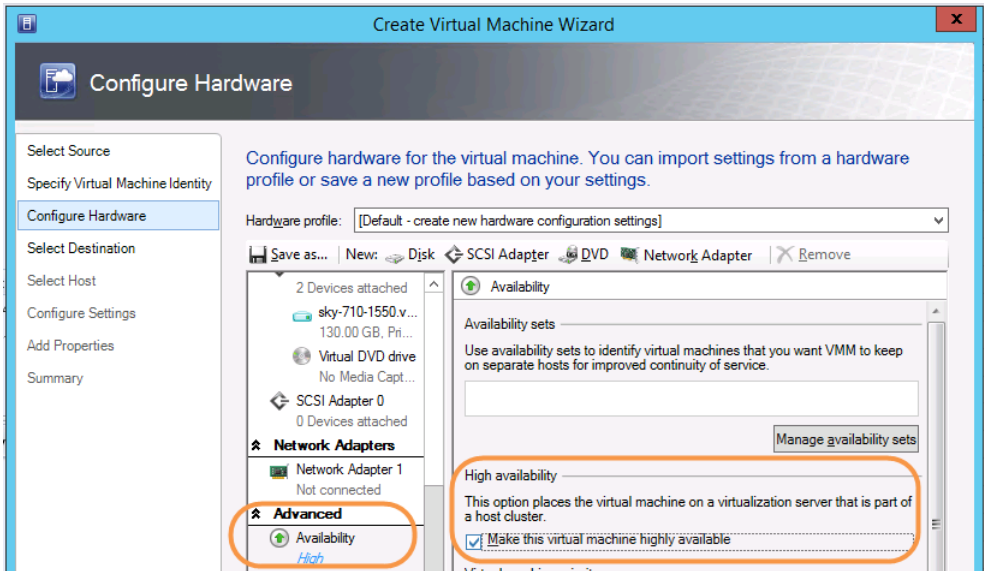
Selecting the VHDX

7. Name your virtual machine and select **Next**.
8. Set up the CPU/Processors and memory based on the VDP Appliance license (see Chapter 1, Before You Begin) and select **Next**.



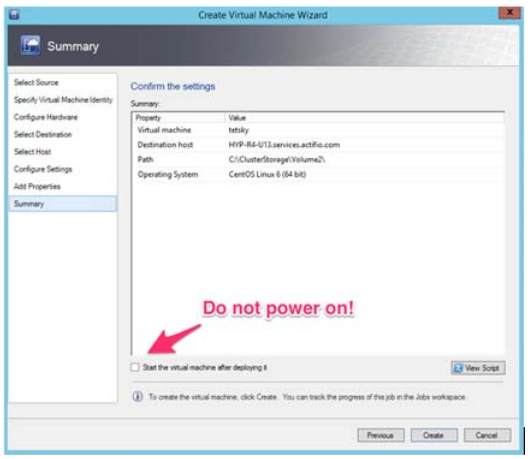
Creating the VM

9. Select **Availability** under Advanced and select **Make this virtual machine highly available**.



Creating the VM

10. Click **Next**.
11. Under Select Destination, place the virtual machine where you want it to reside and select **Next**.
12. Under Select Host, select the Hyper-V server and select **Next**.
13. Select the Storage location for the OS and select **Next**.
14. Select CentOS Linux 6 (64 bit) for operating system and select **Next**.
15. Uncheck Start the virtual machine after deploying it and click **Create**.



Configuring the VDP Appliance VM in SCVMM

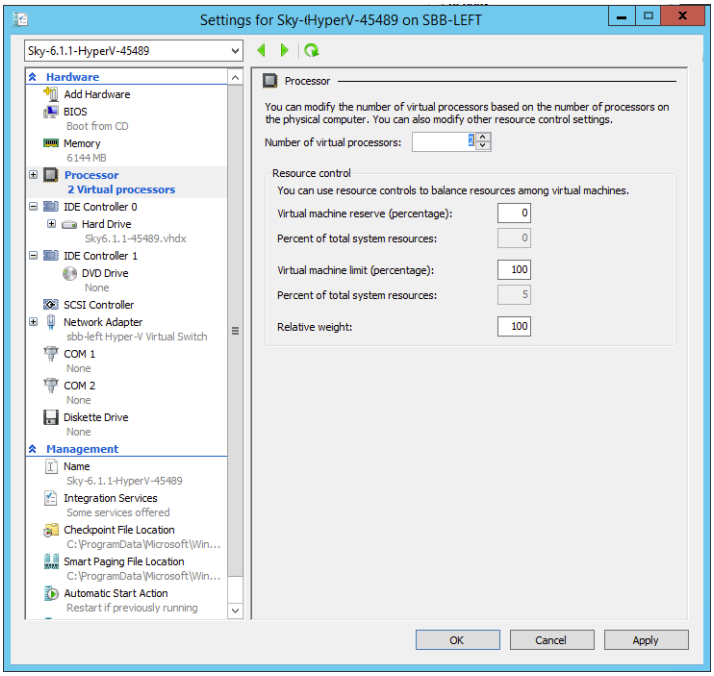
Once the VDP Appliance VM has been deployed:

Configure CPUs and Memory on page 6

Configure Disks on page 7

Configure CPUs and Memory

The VM's CPUs and memory are configured from the hardware summary page:



Configure the CPUs and memory to meet your VDP Appliance license requirements from Chapter 1, Before You Begin.

Note: *If you configured the startup memory to match your license memory requirements, you will not have to adjust the memory allocation here.*

Configure Disks

Note: *The pool names associated with these disks are used in* Chapter 5, Configuring the IBM InfoSphere VDP Appliance*.*

1. Run the New Virtual Hard Disk Wizard three times to define three new blank virtual hard disks on separate RAID-6 arrays:

Disk Name	Minimum Size	SCSI	Controller	Virtual Node
Primary Pool: The Primary Pool is used by the IBM InfoSphere VDP Appliance.	400GB	Own SCSI	0 (the OS controller)	1
Snapshot Pool: The Snapshot Pool accommodates the full copies (snapshots) to be retained, plus enough space for future growth.	10GB	Own SCSI	1	0
Dedup Pool: The Dedup Pool accommodates the deduplicated data to be retained, plus enough space for future growth.	1TB	Own SCSI	2	0

Caution: *Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add new disks on the same controller (snapshot disks on Controller 1, dedup disks on Controller 2).*

2. The next step is adding SCSI adapters, detailed in Chapter 4, Adding SCSI Adapters.

3 Installing an IBM InfoSphere VDP Appliance with Hyper-V Manager

This chapter details:

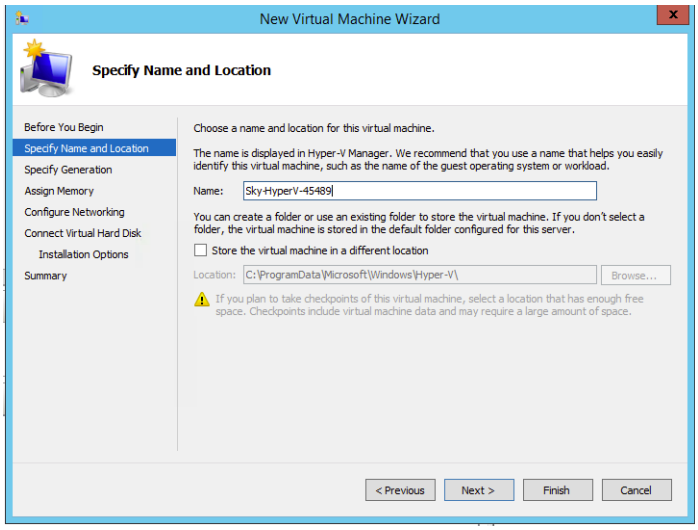
Deploying the VHDX in Hyper-V Manager on page 9

Configuring the VDP Appliance VM in Hyper-V Manager on page 12

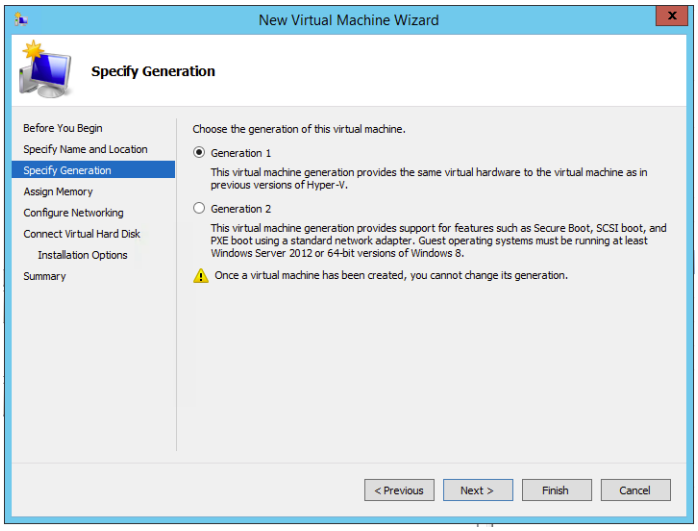
Deploying the VHDX in Hyper-V Manager

1. Get a copy of the VHDX file from your IBM InfoSphere representative and put it in a location accessible by the Hyper-V hypervisor that will host the VDP Appliance.
2. Deploy the VHDX like any other Hyper-V VM.

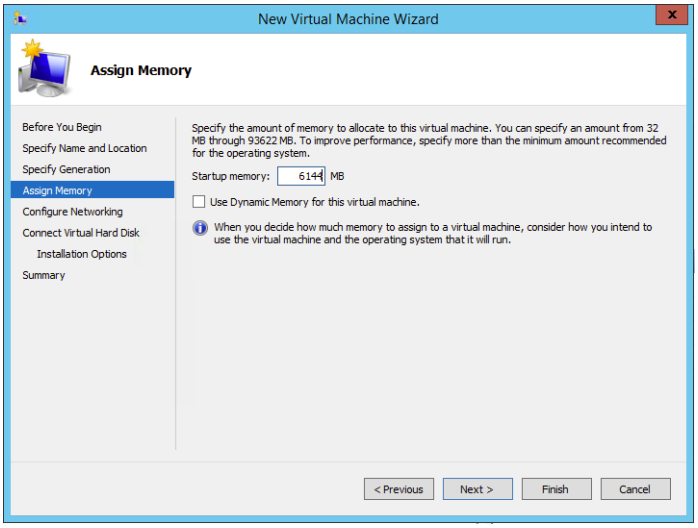
Note: *Because the appliance is deployed like any other VHDX, only the steps in the deployment procedure of particular interest to the VDP Appliance installer are called out.*



3. When prompted, give the virtual machine a unique name. This is the name Hyper-V will use. It is not the name displayed in the VDP Appliance user interface.

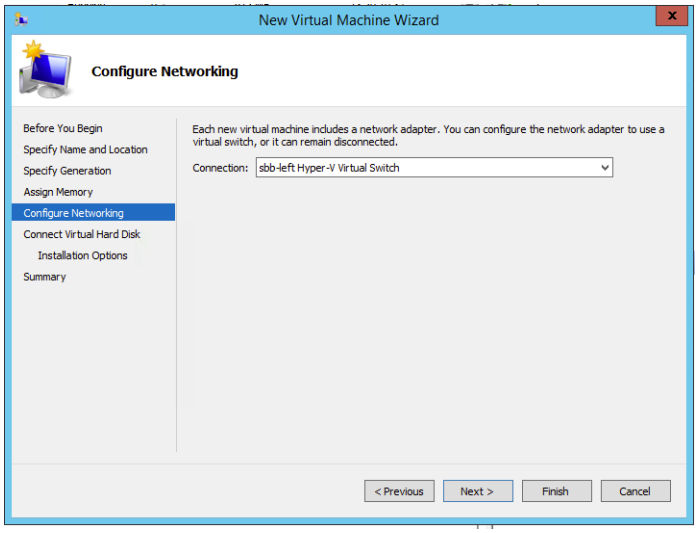


4. When prompted to specify a Generation, select **Generation 1**.

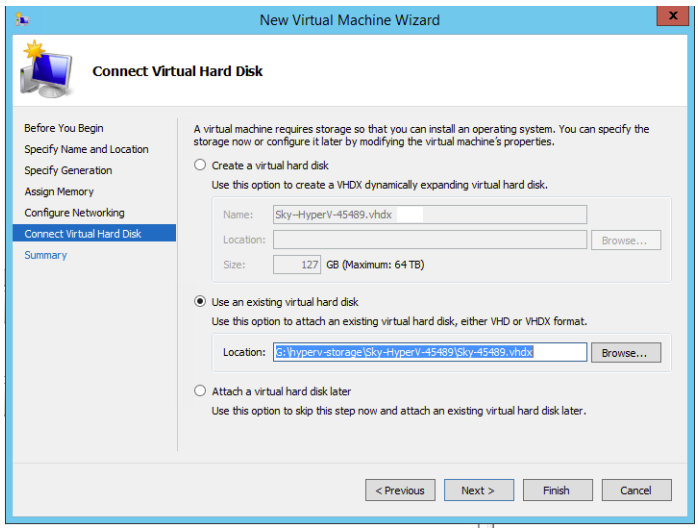


5. Set Startup Memory to match that of your license requirements. See Before You Begin on page 1 for details.

6. Uncheck **Use Dynamic Memory for this virtual machine**. Dynamic memory will render the VDP Appliance unstable.



7. To configure networking, use a Hyper-V virtual switch that grants access to your production data.



8. When prompted to Connect Virtual Hard Disk, use the VDP Appliance VHDX as the boot image:
   a. Select **Use an existing virtual hard disk**.
   b. For location, browse to or enter the path to the VDP Appliance VHDX image.

Note: *After system boot, you will not be able to move this disk.*

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9. Click **Finish**.

Configuring the VDP Appliance VM in Hyper-V Manager

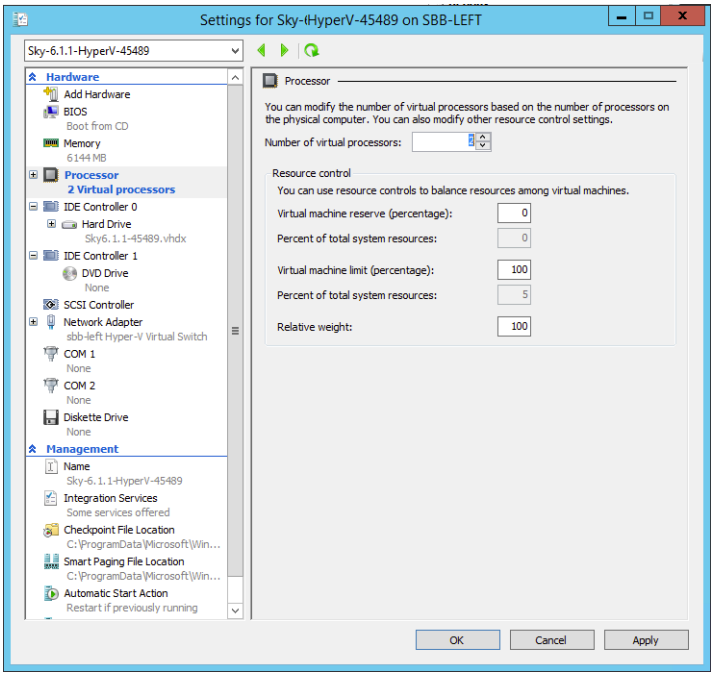
Once the VDP Appliance VM has been deployed:

Configure CPUs and Memory on page 12

Configure Disks on page 13

Configure CPUs and Memory

Configure the VM's CPUs and memory from the hardware summary page:



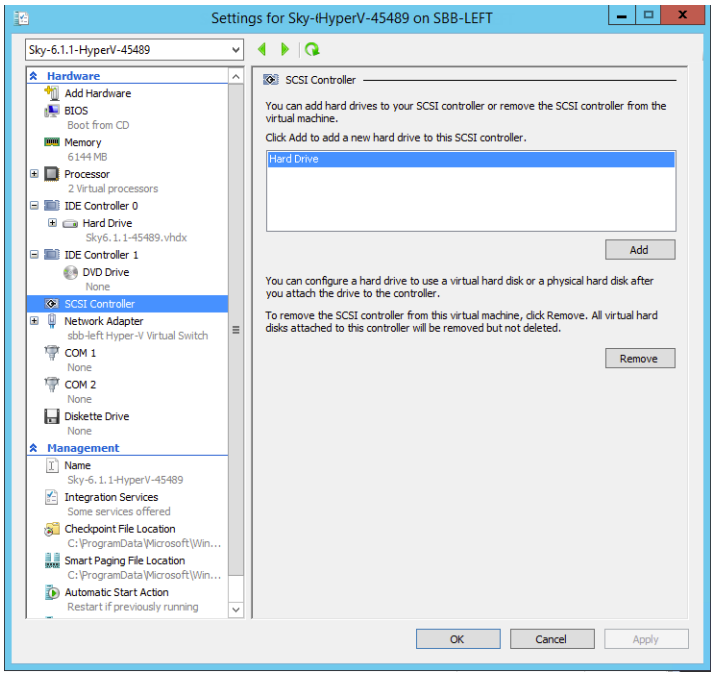
Configure the number of CPUs and memory to meet your VDP Appliance license requirements. See Before You Begin on page 1 for details.

Note: *If you configured the startup memory to match your license memory requirements, you will not have to adjust the memory allocation here.*

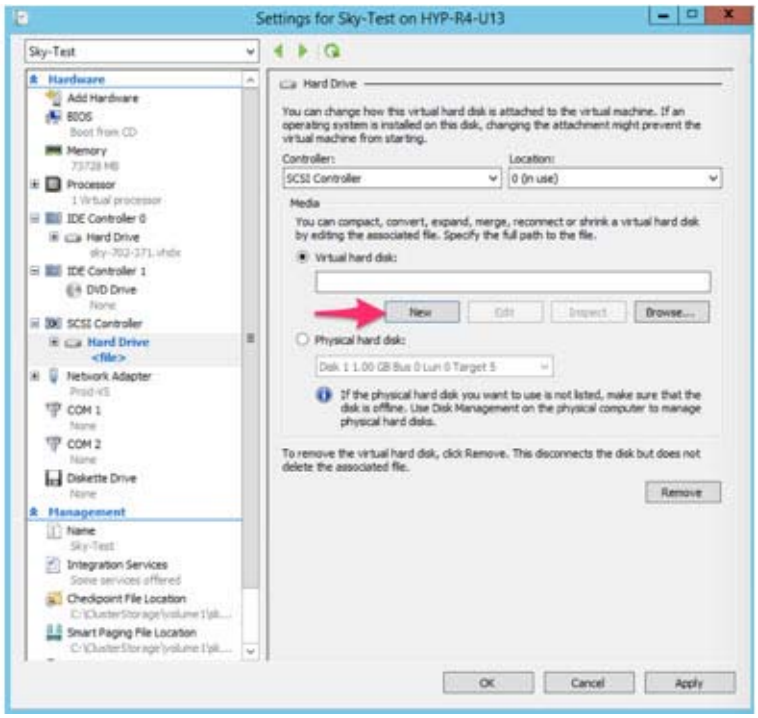
Configure Disks

To size your VDP Appliance, your IBM InfoSphere representative considered the amount of data to be captured, its type, change rate, growth, and how long it would be retained. This same information is required to allocate space for the appliance's disks.

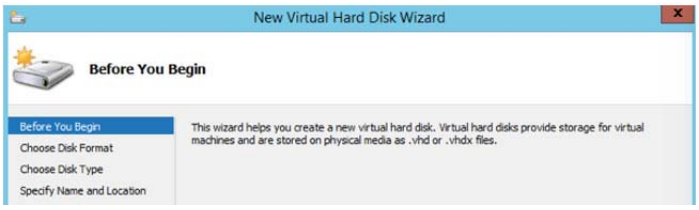
1. From the VM's summary page left-hand navigation, select **SCSI Controller**.



2. Click **Add** and the Disk Wizard will begin. You will add three disks.
3. Click **New** to open the New Virtual Hard Disk Wizard.



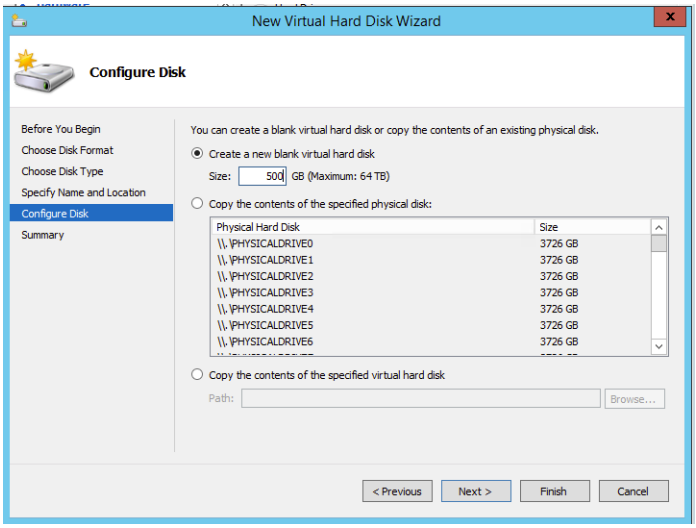
4. Use the New Virtual Hard Disk Wizard to create three VHDX fixed-size hard disks using their own SCSI on separate RAID-6 arrays.



5. Make sure VHDX is selected and click **Next**.
6. Select **Fixed size** and **Next**.
7. Assign Disk Name and set these parameters:

Disk Name	Minimum Size	SCSI	Controller	Virtual Node
Primary Pool: The Primary Pool is used by the IBM InfoSphere VDP Appliance.	400GB	Own SCSI	0 (the OS controller)	1
Snapshot Pool: The Snapshot Pool accommodates the full copies (snapshots) to be retained, plus enough space for future growth.	10GB	Own SCSI	1	0
Dedup Pool: The Dedup Pool accommodates the deduplicated data to be retained, plus enough space for future growth.	1TB	Own SCSI	2	0

Caution: *Do not resize disks for Snapshot and Dedup Pools. If additional storage is needed, add new disks on the same controller (snapshot disks on Controller 1, dedup disks on Controller 2).*

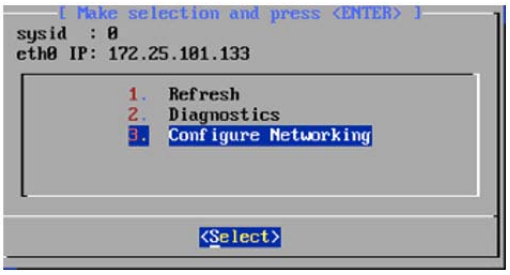


8. The next step is adding SCSI adapters, detailed in Chapter 4, Adding SCSI Adapters.

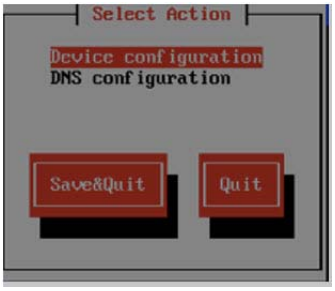
4 Adding SCSI Adapters

After deploying and configuring the VDP Appliance VM as detailed in Chapter 2, Installing an IBM InfoSphere VDP Appliance Using SCVMM or Chapter 3, Installing an IBM InfoSphere VDP Appliance with Hyper-V Manager, you must add SCSI adapters through the new VM's console:

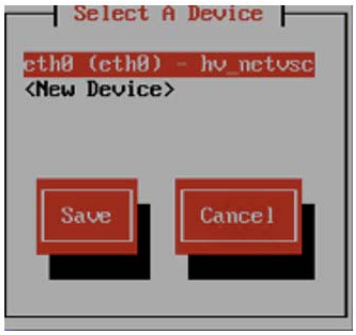
1. Right-click on the VDP Appliance and select Power on.
2. Right-click on the VDP Appliance and select Connect or View Connect via Console.
3. Connect to console and enter Alt-F2, select 3 and enter.



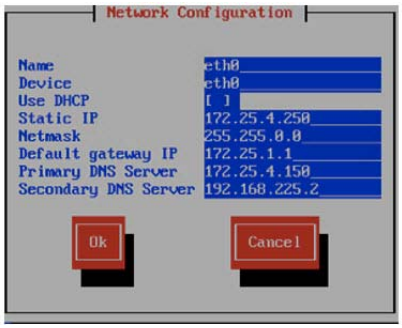
4. Click Enter for Device configuration.



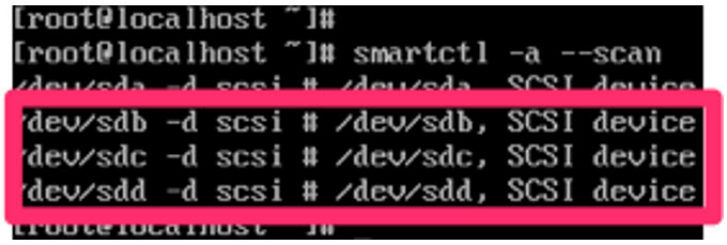
5. Click Enter for eth0 settings.



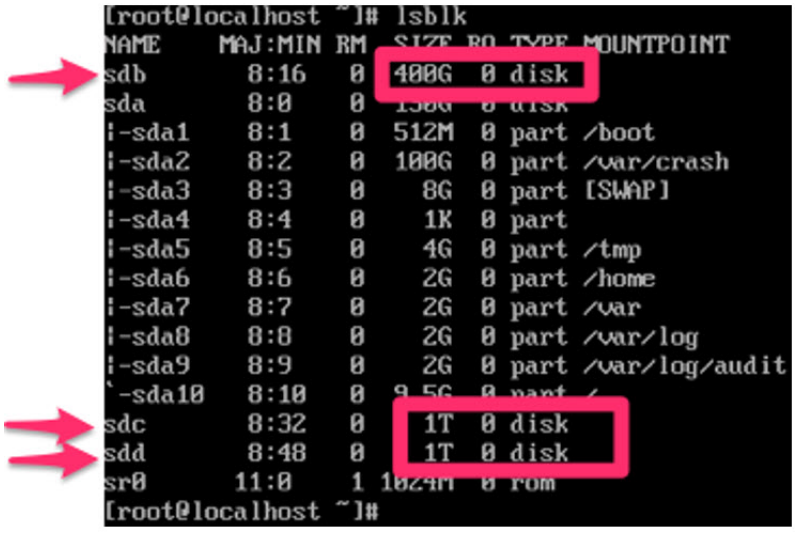
6. De-select Use DHCP and assign an IP address. DHCP is not supported outside of cloud service providers.



7. Select OK, select Save, and select Save&Quit.
8. Use Alt-F3 to login as root / IBM InfoSphere2
9. Run smartctl -a --scan (Should see 3 new devices)



10. Run lsblk to verify the sizes.

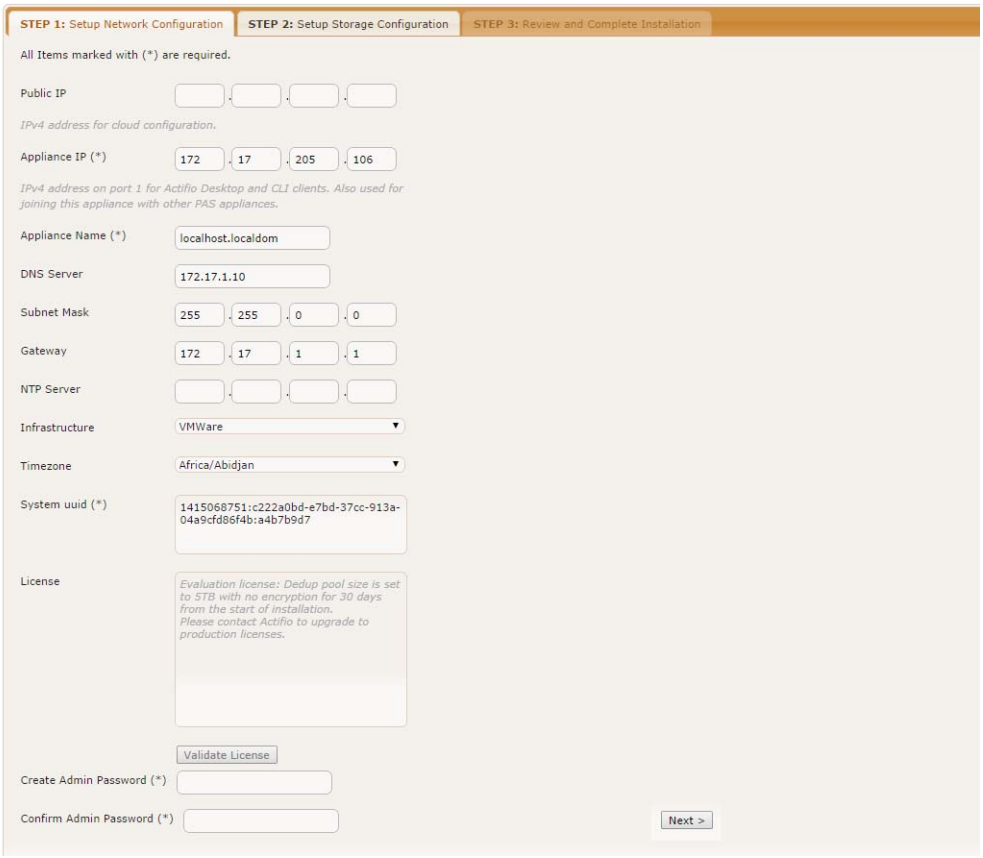


11. Now point your browser at the IP address to run the installer as detailed in Chapter 5, Configuring the IBM InfoSphere VDP Appliance.
12. Remember to add in the SSDs if required. Instructions are in Chapter 6, Adding an SSD to an IBM InfoSphere VDP Appliance.

5 Configuring the IBM InfoSphere VDP Appliance

After the VM is configured and powered up, it is ready to be configured as a VDP Appliance.

1. Open a browser to the IP address of the VDP Appliance: http://<VM IP address>/.
2. The installer opens the first of three tabs:

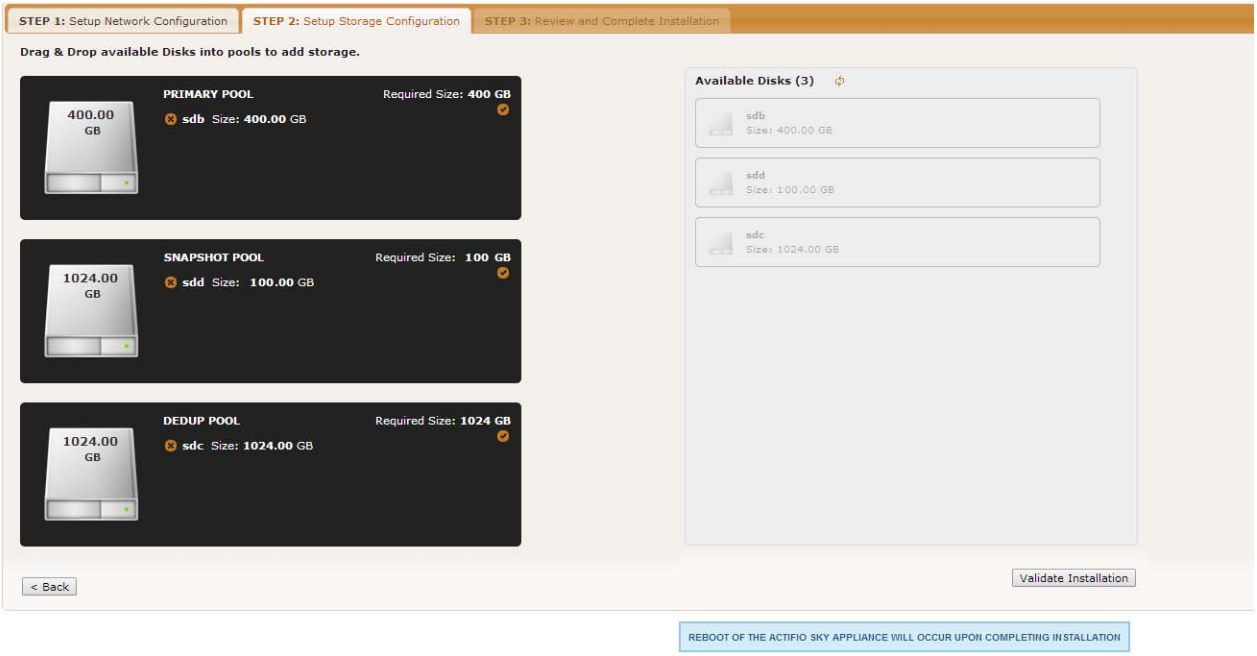


3. Ignore the Public IP field, but ensure that the VDP Appliance IP address is correct.
4. In the space provided, enter a name for the VDP Appliance.
5. Ensure that the network IP addresses are correct.
6. From the Infrastructure drop down menu, select the hypervisor.
7. Set the time zone as needed.
8. If you are installing the VDP Appliance as a 15-day evaluation, leave the License Number field set to the default setting and go to Step 13.

If you are not installing this VDP Appliance as an evaluation, then capture the system UUID and include it in an email license key request for each install to optkeys@us.ibm.com. IBM InfoSphere will use the UUID to generate the VDP Appliance license key.

9. In the space provided, paste a copy of the license key you obtained from the IBM InfoSphere representative.
10. Click Validate License to ensure the validity of the license entered.

    If the license is valid, the Managed Data License (MDL) size will be displayed in a popup window. If there are any optional add-ons included in the license they will also be shown here.
11. If you are using an encryption license, a Pass phrase field is displayed. Enter a pass phrase, record the pass phrase and keep it in a secure location.
12. In the spaces provided enter (create) a password for the first Admin user of the IBM InfoSphere VDP Appliance.
13. Click Next to get to Step 2. This is where you assign the disks created for the Primary, Dedup, and Snapshot pools to their respective pools.



14. Select and drag the Available Disks to the pools for which they were created.
15. Click Validate Installation. The VDP Appliance installer validates the settings and if no issues are encountered, advances to the third tab. Any issues will appear in a yellow field at the top of Step 2.
16. The third tab provides the opportunity to review choices and go back and make changes as needed.

17. Once choices are verified, click Complete Installation and the VDP Appliance will reboot.

Note: *The reboot may take several minutes. The user interface will become responsive before the appliance is ready for use. Do not attempt any operations until the Dedup light on the Dashboard shows green.*

6 Adding an SSD to an IBM InfoSphere VDP Appliance

IBM InfoSphere VDP Appliances that have dedup pools of 30 TB and greater must use an SSD.

Use the hypervisor vendor's best practices to physically add an SSD to a hypervisor.

SSD Compatibility

Dedup Pool	SSD	Required/Optional
50TB	512GB SSD	Required
30TB	308GB SSD	Required
10TB	103GB SSD	Optional
5TB	52GB SSD	Optional
1TB	11GB SSD	Optional

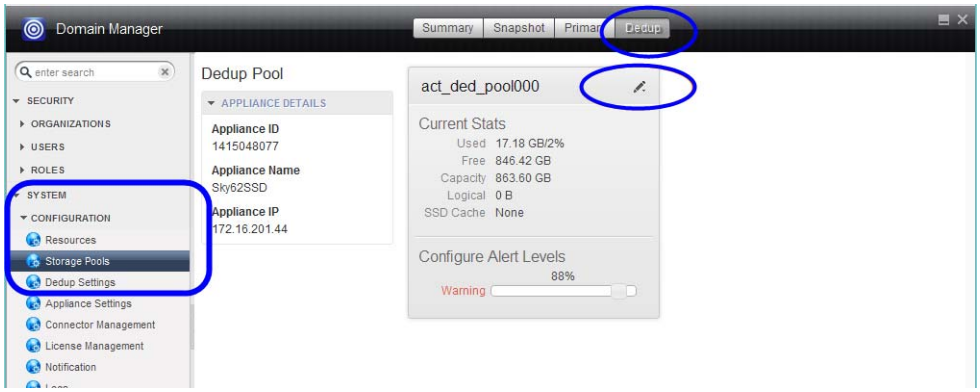
To physically add an SSD, use the hypervisor vendor's best practices for adding an SSD. Once the SSD has been added to the hypervisor, see:

- Adding an SSD via the IVGM on page 20. If IVGM is not yet installed, see ***Installing and Upgrading the IBM InfoSphere VDP - Global Manager (IVGM)***.

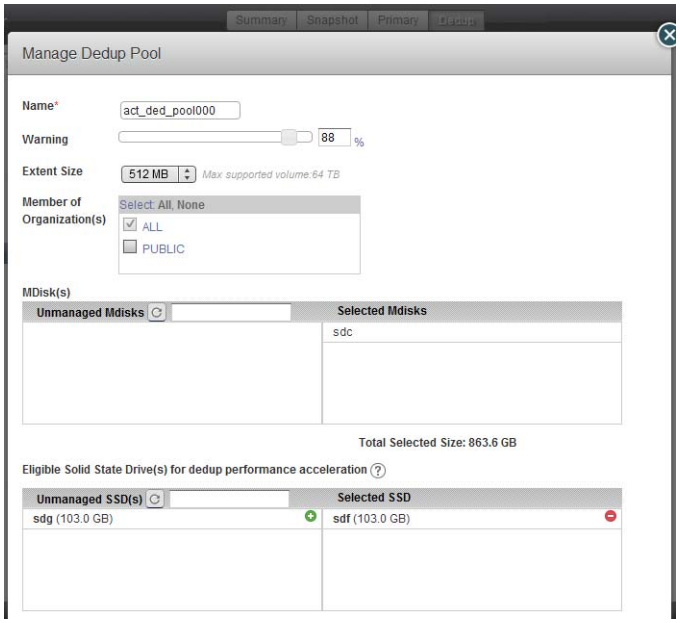
Adding an SSD via the IVGM

Once a hypervisor has been updated with the required SSD, modify the VDP Appliance's Dedup Pool:

1. Open IVGM to the Domain Manager, then go to System > Configuration > Storage Pools.
2. Select the Dedup tab. The Dedup Pool information page opens.



3. Click the pencil icon next to the Dedup Pool name and the Manage Dedup Pool page is displayed:



Note: *If your SSD appears in the list of MDisks and not in the list of eligible SSDs, click the Tag disk as SSD option to select the SSD.*

4. If necessary, scroll down until the SSD section of the window is displayed.
5. In the Unmanaged SSDs column, click the "plus" sign next to the SSD you added and it will move to the Selected SSD(s) column.
6. Click Submit and the SSD is added to the VDP Appliance.